Notice of Allowability	Application No.	Applicant(s)	
	10/608,248	KIMBERLIN, DWIGHT EVANS	
	Examiner	Art Unit	
	Michael P. Stafira	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *filing date 6/27/2003*.

2. ☒ The allowed claim(s) is/are *1-22*.

3. ☒ The drawings filed on *27 June 2003* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Allowable Subject Matter

1. Claims1-22 are allowed over the prior art of record.

2. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the prior art fails to disclose or make obvious a hole inspection system for inspecting complex holes extending between an outer surface of a wall of a structure and an inner surface forming a cavity in the structure, each of the complex holes having an outer portion having a larger cross-sectional area adjacent the outer surface and a smaller cross-sectional area within the wall, and each of the complex holes having an inner portion extending between the smaller cross-sectional area and an inlet opening on the inner surface of the cavity, the hole inspection system having a light source emitting light over its length and adapted to be inserted in the cavity and provide light through the complex holes; a multi-axes machine having a camera mounted thereon, the camera having a lens and being movable by the machine to inspection positions at which the lens is substantially centered over a respective complex hole; and a control connected to the multi-axes machine and the camera and being operable to cause the multi-axes machine to move the camera to successive inspection positions, the control processing substantially only light intensity values representing light shining through a complex hole associated with a respective inspection position, and in combination with the other recited limitations of claim 1. Claims 2-3 are allowed by the virtue of dependency on the allowed claim 1.

Regarding claim 4, the prior art fails to disclose or make obvious a method of inspecting a plurality of complex holes extending between an outer surface of a wall of a structure and an

inner surface forming a cavity in the structure, each of the plurality of complex holes having an outer portion having a larger cross-sectional area adjacent the outer surface and a smaller cross-sectional area within the wall, and each of the plurality of complex holes having an inner portion extending between the smaller cross-sectional area and an inlet opening on the inner surface of the cavity having the steps of illuminating the cavity with a light source emitting light over its length; moving automatically a camera to an inspection position with respect to one of the plurality of complex holes at which the camera would receive light from the one of the plurality of complex holes if the one of the complex holes is properly formed; determining automatically a maximum intensity value of the light received by the camera from the one of the plurality of complex holes, and in combination with the other recited limitations of claim 4. Claim 5 is allowed by the virtue of dependency on the allowed claim 4.

Regarding claim 6, the prior art fails to disclose or make obvious a method of inspecting complex holes extending between an outer surface of a wall of a structure and an inner surface forming a cavity in the structure, each of the complex holes having an outer portion with a larger cross-sectional area adjacent the outer surface and a smaller cross-sectional area within the wall, and each of the complex holes having an inner portion extending between the smaller cross-sectional area and an inlet opening on the inner surface of the cavity having the steps of illuminating the cavity with a light source emitting light over its length; moving automatically a camera to an inspection position with respect to each of the complex holes at which the camera would receive light from a respective complex hole if the respective complex hole is properly formed; determining automatically a maximum intensity value of the light received by the

camera from each of the complex holes, and in combination with the other recited limitations of claim 6. Claims 7-12 are allowed by the virtue of dependency on the allowed claim 6.

Regarding claim 13, the prior art fails to disclose or make obvious A method of calibrating a light inspection system for inspecting a plurality of complex holes extending between an outer surface of a wall of a structure and an inner surface forming a cavity in the structure, each of the plurality of complex holes having an outer portion having a larger cross-sectional area adjacent the outer surface and a smaller cross-sectional area within the wall, and each of the plurality of complex holes having an inner portion extending between the smaller cross-sectional area and an inlet opening on the inner surface of the cavity having the steps of moving automatically a camera to an inspection position with respect to one of the plurality of complex holes at which the larger cross-sectional area of the one of the complex holes is substantially centrally located in a field of view of the camera; determining automatically, with the cavity not being illuminated, a maximum intensity value of the light received by the camera; and determining a threshold intensity value larger than the maximum intensity value, and in combination with the other recited limitations of claim 13. Claims 14-17 are allowed by the virtue of dependency on the allowed claim 13.

Regarding claim 18, the prior art fails to disclose or make obvious A method of calibrating a light inspection system for inspecting complex holes extending between an outer surface of a wall of a structure and an inner surface forming a cavity in the structure, each of the complex holes having an outer portion with a larger cross-sectional area adjacent the outer surface and a smaller cross-sectional area within the wall, and each of the complex holes having an inner portion extending between the smaller cross-sectional area and an inlet opening on the

inner surface of the cavity having the steps of moving automatically a camera to an inspection position with respect to one of the complex holes at which the larger cross-sectional area of the one of the complex holes is aligned with a region of interest within a field of view of the camera; determining automatically, with the cavity not being illuminated, a maximum intensity value of light within the region of interest from the one of the complex holes; and determining automatically a threshold value greater than the maximum intensity value, and in combination with the other recited limitations of claim 18. Claim 19 is allowed by the virtue of dependency on the allowed claim 18.

Regarding claim 21, the prior art fails to disclose or make obvious A method of calibrating a light inspection system for inspecting complex holes extending between an outer surface of a wall of a structure and an inner surface forming a cavity in the structure, each of the complex holes having an outer portion with a larger cross-sectional area adjacent the outer surface and a smaller cross-sectional area within the wall, and each of the complex holes having an inner portion extending between the smaller cross-sectional area and an inlet opening on the inner surface of the cavity having the steps of moving automatically a camera to inspection positions with respect to a plurality of the complex holes at which the larger cross-sectional area of a respective complex hole is aligned with a region of interest within a field of view of the camera; determining automatically, with the cavity not being illuminated, a maximum intensity value of the light within the field of interest for each of the plurality of the complex holes; illuminating the cavity with a light source; moving automatically a camera to the inspection positions with respect to the plurality of the complex holes; determining automatically a minimum intensity value of the light within the field of interest for each of the plurality of the

complex holes; and determining automatically a threshold value greater than the maximum intensity value, and in combination with the other recited limitations of claim 21. Claim 22 is allowed by the virtue of dependency on the allowed claim 21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Stafira whose telephone number is 571-272-2430. The examiner can normally be reached on 4/10 Schedule Mon.-Thurs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael P. Stafira
Primary Examiner
Art Unit 2877

May 13, 2005